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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/903,904	07/11/2001	Hung-Lien Shen	1007-012	1858

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EXAMINER

HAILU, TADESSE

ART UNIT	PAPER NUMBER
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2173

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DATE MAILED: 06/14/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/903,904

Applicant(s)

SHEN, HUNG-LIEN

Examiner

Tadesse Hailu

Art Unit

2173

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 March 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-9 is/are allowed.
- 6) ☒ Claim(s) 10-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. This Office Action is in response to the AMENDMENT entered on March 30, 2004 for the patent application number 09/903,904 filed 11 July 2001.
2. The pending claims 1-19 are examined as follow.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

3. Claim 10 is rejected under 35 U.S.C. 102(a) as being anticipated by IBM Technical Bulletin, "Computer Input Device Via Nerve Signal," August 1989.

With regard to claim 10:

As per "a data input method for use to input data to a computer system". As illustrated in Fig. 1, and as described in pages 1-3, IBM does disclose a method for inputting data to a computer.

As per "coupling a sending device to a user's wrist, the sending device capable of sensing wrist's muscle movements due to hand digit-bending movements within certain range of angle for representing a specific character to thereby produce a corresponding electrical signal". As illustrated in Figs. 1-2, as described in pages 1-3, IBM further discloses, a sensing device (EMG sensors) coupled by the user's hand (wrist) is disclosed. Similar to the current claim, the sensing device is capable of

sensing hand's (wrist's) muscle movements to thereby produce a corresponding electrical signal (see IBM, pages 1-3). Sensing the user's hand (wrist) muscle movements to thereby produce a corresponding data signal is also disclosed (see IBM, pages 1-3). IBM further discloses the sensor detects the nerve signals, which results in muscle movement of the fingers (IBM, page 1). IBM further discloses having more sensors, which would allow for interpretation of more than one axis of movement for each finger (IBM, page 3).

As per "converting the electronic signal into a corresponding data signal". As illustrated in Fig. 2, and as described in page 1, *electronics 21* are used to convert electronic signal into data signal.

As per "transmitting the data signal to the computer system". IBM discloses Transmitting the data signal to the computer system is also disclosed (see IBM, Fig. 2).

As per "activating the computer system to search through a character mapping table to find the data corresponding to the data signal". Once the data signal is received by the computer, the computer matches or maps the data signal to the corresponding alpha numeric character and displaying the alpha numeric character on a computer screen (see IBM, pages 1-3).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 11-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over IBM Technical Bulletin, "Computer Input Device Via Nerve Signal," in view of Fukumoto et al US Pat. No. 6,380,923.

With regard to claim 11:

IBM describes and illustrates A/D conversion (signal conversion unit) (Fig. 2, #21), and a filter (signal processing unit) (Fig. 2, #21). Furthermore, while IBM describes a computer input device (Fig. 1) in a form of elastic cuff with built-in EMG (electromyographic) sensors to sense a wrist muscle movement, but the claim calls for piezoelectric sensor which IBM is silent in disclosing it. Fukumoto discloses wearable input device with piezoelectric sensor (Fig. 1). Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to replace piezoelectric sensor in place of electromyographic sensor because both are sensing hand (wrist) muscle movement of the user and also as suggested by IBM, adding or incorporating more sensors would yield a better interpretation of data signal.

With regard to claim 12:

IBM in view of Fukumoto describes and illustrates a piezoelectric sensor attached to the user's wrist to sense the wrist's muscle movement representing a keyboard character intended for input to the computer system and produces a corresponding electrical signal (see IBM, pages 1-3).

With regard to claim 13:

IBM in view of Fukumoto illustrates that the signal conversion unit is coupling with piezoelectric sensor (see IBM, Fig. 1).

With regard to claims 14 and 15:

IBM in view of Fukumoto describes that the data signal as a digital signal, and as an analog signal (see IBM, pages 1-3).

With regard to claim 16:

IBM in view of Fukumoto illustrates that the signal filtering mechanism (the signal processing unit) are integrated/coupled to A/D conversion unit (see IBM, Fig. 2). The signal filtering mechanism, after filtering (processing) the received data signal from A/D conversion, transmits to the computer system (see IBM, Fig. 2).

With regard to claim 17:

IBM illustrates and describes a data input method for use with a sensing device including (electromyographic) sensors, a signal conversion unit coupled to a signal filtering (processing unit), to input data to a computer system. IBM further describes coupling the sensing device (IBM, Fig. 1) to user's wrist, the sensing device capable of sensing wrist's muscle movements to thereby, producing a corresponding electrical signal (see IBM, Figs. 1 and 2). IBM further describes and illustrates sensing the user's hand (wrist) muscle movements representing a keyboard character. IBM further discloses having more sensors, which would allow for interpretation of more than one axis of movement for each finger (IBM, page 3). IBM also describes converting the electrical signal into a data signal. The filtering mechanism filters the data signal for transmission to the computer system. The computer system then matches the received data signal to the corresponding data and displays the data on the monitor screen (see IBM, pages 1-3).

Furthermore, while IBM describes a computer input device (Fig. 1) in a form of elastic cuff with built-in EMG (electromyographic) sensors to sense a wrist muscle movement, but the claim calls for piezoelectric sensor which IBM is silent in disclosing it. Fukumoto discloses wearable input device with piezoelectric sensor (Fig. 1).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to replace piezoelectric sensor in place of electromyographic sensor because both are sensing hand (wrist) muscle movement of the user and also as suggested by IBM, adding or incorporating more sensors would yield a better interpretation of data signal.

With regard to claim 18:

IBM further describes and illustrates a data input device for use to input data to a computer system (See IBM, Fig. 1), including an electromyographic sensors coupled to the user's hand and capable of sensing hand's muscle movements to thereby produce a corresponding electrical signal representing a computer data intended for input to the computer system (see IBM, pages 1-3). IBM in view of Fukumoto illustrates that the signal conversion unit is coupling with electromyographic sensors (see IBM, Fig. 1). IBM in view of Fukumoto illustrates that the signal filtering mechanism (the signal processing unit) are integrated/coupled to A/D conversion unit (see IBM, Fig. 2). The signal filtering mechanism, after filtering (processing) the received data signal form A/D conversion, transmits to the computer system (see IBM, Fig. 2).). IBM further discloses having more sensors, which would allow for interpretation of more than one axis of movement for each finger (IBM, page 3).

Furthermore, while IBM describes a computer input device (Fig. 1) in a form of elastic cuff with built-in EMG (electromyographic) sensors to sense a wrist muscle movement, but the claim calls for piezoelectric sensor which IBM is silent in disclosing it. Fukumoto discloses wearable input device with piezoelectric sensor (Fig. 1). Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to replace piezoelectric sensor in place of electromyographic sensor because both are sensing hand (wrist) muscle movement of the user and also as suggested by IBM, adding or incorporating more sensors would yield a better interpretation of data signal.

With regard to claim 19:

Independent claim 19 corresponds generally to independent claim 18 and recites similar features in system form, and therefore is rejected under the same rationale.

Response to Arguments

5. Applicant's arguments filed March 30, 2004 have been fully considered but they are not persuasive. Applicant argues that IBM does not disclose piezoelectric sensor." Examiner also admits that IBM does not disclose piezoelectric sensor, however based on IBM suggestion, incorporating Fukumoto, which teaches piezoelectric sensor results the claimed invention.

Applicant also argues that IBM does not disclose the claimed sensing device coupled to the user's wrist. In contrast to the applicant's argument, IBM further discloses having more sensors, which would allow for interpretation of more than one axis of movement for each finger (IBM, page 3). IBM also discloses the cuff can be worn any

where between the wrist and elbow (IBM, page 1). Thus, IBM detects the nerve signals, which results in muscle movement of the fingers (IBM, page 1).

Applicant also argues that the rest of the claims are not disclosed in the prior art of records. In contrast to the applicant's argument, the prior art of records discloses the claimed subject matter of the current invention (see the rejections to each corresponding claims above).

Allowable Subject Matter

6. Claims 1-9 are allowed.

The following is an examiner's statement of reasons for allowance:

The prior art of records failed to teach the limitations recited in independent claim 1, that is, "predefining a set of combinations of hand digit movements, each combination of hand digit movements representing a specific character," and "predefining a character mapping table which maps each combination of hand digit movements predefined in the above step to a specific character."

Thus, prior art neither renders obvious nor anticipates the combination of claimed elements in light of the specification.

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

Art Unit: 2173

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

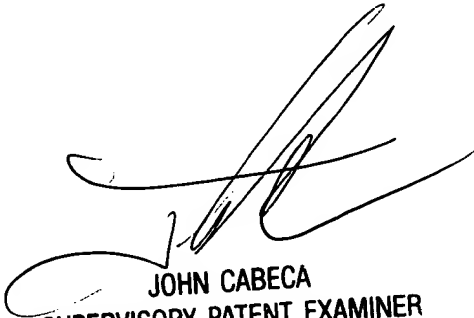
8. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Tadesse Hailu, whose telephone number is (703) 306-2799. The Examiner can normally be reached on M-F from 10:00 - 6:30 ET. If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, John Cabeca, can be reached at (703) 308-3116 Art Unit 2173 CPK 2-4A51.

9. The Official fax number is (703) 872-9306.

10. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 305-3900.

Tadesse Hailu

June 7, 2004



JOHN CABECA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100